Abstract Submitted
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Reduced Modeling of Electron Trapping Nonlinearity in Raman Scattering[1] D.J. STROZZI, R.L. BERGER, LLNL, H.A. ROSE, LANL, A.B. LANGDON, E.A. WILLIAMS, LLNL — The trapping of resonant electrons in Langmuir waves generated by stimulated Raman scattering (SRS) gives rise to several nonlinear effects, which can either increase or decrease the reflectivity. We have implemented a reduced model of these nonlinearities in the paraxial propagation code pF3D [R. L. Berger et al., Phys. Plasmas 5 (1998)], consisting of a Landau damping reduction and Langmuir-wave frequency downshift. Both effects depend on the local wave amplitude, and gradually turn on with amplitude. This model is compared with 1D seeded Vlasov simulations, that include a Krook relaxation operator to mimic, e.g., transverse sideloss out of a multi-D, finite laser speckle. SRS in these runs develops from a counter-propagating seed light wave. Applications to ICF experiments will also be presented.

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